

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YASUTAKA SAKAINO
JOUJI KATO and YOSHIAKI UMEZAWA

Appeal No. 2003-1590
Application No. 09/229,628

ON BRIEF

MAILED

JUL 13 2004

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before KIMLIN, GARRIS and OWENS, Administrative Patent Judges.
KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 3-5 and 16-21. Claims 6-15, the other claims remaining in the present application, have been allowed by the examiner.

Claim 3 is illustrative:

3. A semiconductor integrated circuit device,
comprising: a source region formed on a semiconductor
substrate;

a first conductor having a first resistivity
formed over said source region;

Appeal No. 2003-1590
Application No. 09/229,628

a first contact group having contacts connecting said source region and said first conductor;

a second conductor having a second resistivity over said first conductor;

a second contact group having contacts connecting said first conductor and said second conductor;

a drain region formed on said semiconductor substrate;

a third conductor having said first resistivity formed over said drain region;

a third contact group having contacts connecting said drain region and said third conductor;

a fourth conductor having said second resistivity formed over said third conductor;

a fourth contact group having contacts connecting said third conductor and said fourth conductor;

wherein a total number of contacts in said first contact group is different from a total number of contacts in said second contact group, and

a total number of contacts in said third contact group is different from a total number of contacts in said fourth contact group.

The examiner relies upon the following references as evidence of obviousness:

Narita	5,844,281	Dec. 01, 1998
Ando et al. (Ando)	JP 6-232,345	Aug. 19, 1994

Appeal No. 2003-1590
Application No. 09/229,628

Appellants' claimed invention is directed to a semiconductor integrated circuit device, such as a transistor, which comprises source and drain regions having each of the regions covered by a first conductor with a first resistivity which, in turn, is covered by a second conductor having a second resistivity. Also, each of the source and drain regions have two contact groups wherein the total number of contacts in the two groups is different. According to appellants, by using a greater number of contacts in the contact group connecting the source and drain regions to the first conductor than contacts in the group connecting the first and second conductors, the overall ON resistance of a transistor is less than the overall ON resistance of prior art devices.

Appealed claims 1-5 and 16-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Narita.

We have thoroughly reviewed the respective positions advanced by appellants and the examiner. In so doing, we find ourselves in agreement with appellants that the examiner has failed to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejection.

Although Ando, like appellants, discloses two-level wiring over both the source and drain regions, the examiner recognizes that Ando does not disclose a different number of contacts in the two contact groups in either the source or drain region, let alone in both regions as presently claimed. To remedy this deficiency, the examiner relies upon Narita for disclosing a different number of contacts in the two contact groups in the source region. The examiner reasons that it would have been obvious for one of ordinary skill in the art to modify the device of Ando by having a different number of contacts in the two contact groups in both the source and drain regions "because Narita clearly teaches the motivation of preventing the breakdown of diffusion region (i.e., source and drain regions) by limiting the current flowing through the higher number of contacts in the first level wiring group (column 5, lines 31-35)" (page 7 of answer, first paragraph, last sentence).

The problem with the examiner's rationale is two-fold. First, Narita fails to teach or suggest using a different number of contacts in two contact groups in the drain region. As set forth by appellants, "[t]he prior art of Ando and Narita provides

Appeal No. 2003-1590
Application No. 09/229,628

no motivation for changing the number of contact holes over a drain region, and further provides no reasonable expectation that such changing the number of contact holes over a drain region would be successful" (page 2 of reply brief, second paragraph). Secondly, appellants correctly point out that the portion of Narita cited by the examiner as motivation for modifying Ando does not say what is asserted by the examiner. According to the examiner, the motivation arises from a teaching in Narita that a greater number of contacts in the first and third contact groups prevent "the breakdown of diffusion layer by limiting the current flowing through the total number of holes in the first and third contact hole groups" ([page 4 of answer, fourth paragraph). However, Narita, at column 5, lines 31-35, provides no disclosure that current flow is limited by the arrangement of contact holes but, rather, teaches that "a current can be limited by the resistance of the tungsten silicide wiring 11."

Appeal No. 2003-1590
Application No. 09/229,628

In conclusion, based on the foregoing, the examiner's
decision rejecting the appealed claims is reversed.

REVERSED

<i>Edward C. Kimlin</i>)	
EDWARD C. KIMLIN)	
Administrative Patent Judge)	
)	
<i>Bradley R. Garriss</i>)	
BRADLEY R. GARRIS)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
<i>Terry J. Owens</i>)	
TERRY J. OWENS)	
Administrative Patent Judge)	

EAK/vsh

Appeal No. 2003-1590
Application No. 09/229,628

VENABLE, BAETJER, HOWARD AND CIVILETTI, LLP
P.O. BOX 34385
WASHINGTON, DC 20043-9998